SHIPBOARD ASSESSMENTS
AND
OTHER RELATED PROFICIENCY ASSIGNMENTS
FOR OFFICER IN CHARGE OF ENGINE ROOM WATCH

CHECKLIST

OFFICER IN CHARGE OF ENGINE ROOM WATCH

PROFICIENCY ASSESSMENTS

* The tables in the STCW National Performance Guidelines call for the use of assessor checklists in certain assessments in order to foster completeness of the assessment, and consistency and fairness between the assessments of various candidates. This sample checklist is for the use of assessors in developing their own checklists that reflect the specific equipment, and operating procedures and protocols that will be used or in place during the assessment. This sample checklist reflects the approach and general level of detail deemed necessary to achieve its intended purposes. The specific tasks, procedures and sequences shown in this sample checklist may differ from those in place at the assessment site. In those instances, it will be the assessor's responsibility to make the necessary adjustments so that the checklist used during the assessment fairly, accurately and completely reflects the components of the proficiency that demonstrated by the candidate to prove competence.

Once developed and finalized, the Assessor's checklist may be given to the candidate to use as a tool to learn or become familiar with the systems and procedures that will be used during the assessment. However, during the actual assessment the candidate may not refer to or otherwise use the checklist as a job aid.

~~**I. Testing operational steering gear in preparation for getting underway**~~

COMMENT: A candidate must be ***knowledgeable and understand,*** through training, the procedures to "test" **ALL** gear as part of the overall set of procedures for getting underway. **ALL** tests are the responsibility of the Chief Engineer, who may delegate to an engineer the responsibilities to conduct the actual test. STCW was not meant to be either a manning document or to redesign union/work contracts, and therefore it must be pointed out that the First Assistant Engineer has traditionally been designated to prepare the main engines and personally "test" the steering gear, with the **assistance of the watchstander**. Table A-III/2 of the STCW Code identifies the Second and Chief Engineers as the engineers who are required to meet the competency through which to *"Detect and identify the cause of machinery malfunctions and correct the fault."* As there is no reference in Table A-III/1 of the

requirement to "test" equipment, the candidate for OICEW should not be **assessed through a practical demonstration** for a task they are not to be held responsible.

Nonetheless, there are routines regarding the "testing of gear" required by 46 CFR 78.17-15 for which the OICEW should not only have been provided training, but as part of the routine of a watchstander for getting underway **should be part of the practical demonstration assessment process.** The checklist below is representative of this procedure:

1. Within twelve hours of posted sailing the OICEW will have coordinated with the OICNW the time by which "gear will be tested."
2. Uses engine room phone to notify OICNW that engine department is ready to test gear.
3. Candidate responses to movement of engine orders from bridge via engine order telegraph, notifying bridge of any discrepancies, logging same into engine room log book.
4. Bridge will sound ship's whistle and notify engine room via telephone of any inadequacies of this test.
5. Engine room will telephone senior engineer in steering gear room that bridge is ready to test steering gear.
6. Senior engineer contacts Navigation Bridge when ready to test steering gear.
7. During testing of steering gear, "run" indicator lights and power failure alarms will be observed and noted as functional as appropriate.
8. When testing of ship's internal communication system, ship's whistle, engine order telegraph, and steering gear have been completed OICNW will contact engine room and relate any problems noted during tests and indicate at what time testing of gear would be logged.
9. Engine room logbook entry will be made as "Tested all gear at " " hours.
10. Engine room bell log will be prepared for pending departure also noting time that all gear was tested.

	~~Pass~~	~~Fail~~
~~1. Establishes communication with personnel on bridge~~		
~~2. Verifies that operating instructions are properly posted and accurate~~		
~~3. Energizes the equipment and tests the operation of each motor and pump assembly, using both port and starboard control cables~~		
~~4. Operates each motor and pump assembly from bridge, alternative control stations, and steering gear room through the full range of rudder travel~~		
~~5. Operates each motor and pump assembly on the normal, alternate, and emergency power supplies, checking for proper operation of manual feeder transfer switch and automatic bus transfers~~		
~~6. Reports or notes unusual noise, vibration, oil leakage, or abnormal hydraulic pressure during the operation of the steering gear apparatus~~		
~~7. Tests all alternate systems, alarms and indicators under the following simulated casualty conditions:~~		
~~rudder angle indicator~~		
~~motor pilot (running) light~~		
~~feeder circuit breaker open~~		
~~feeder circuit fuse open~~		
~~motor overload~~		
~~electrical power failure to steering gear control system~~		
~~power failure to steering gear power unit~~		

	low hydraulic oil level		
	phase failure (3-phase power supply)		
	steering failure alarm		
8. Correctly describes actions as they are being performed			
9. No safety violations are observed			

COMMENT – Checklist II and III: A candidate must be ***knowledgeable and understand,*** through training, the procedures to start-up and properly secure the ship's service refrigeration system. STCW was not meant to be either a manning document or to redesign union/work contracts, and therefore it must be pointed out that the Chief and First Assistant Engineers have traditionally been responsible for the starting, securing and repair of the refrigeration and air conditioning systems. Hence, the competency of "Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and protection of the marine environment" in **Table A-III/2** of the STCW Code is more appropriate at the Management Level, particularly in regards to the requirements of CFC reduction required by EPA as an outcome of the Montreal Protocol of 1989. As the reference in **Table A-III/1** is limited to "monitoring" it would not be incumbent upon us to require something that is not directly required under STCW.

I must also point out that during the Castine- Academy Working Group sessions as well as the MERPAC Working Group sessions held at Mass Maritime in September of 1999, it was agreed by the entire working group that while training and lab exercises in the start-up and securing of the refrigeration systems was essential, this practical demonstration would NOT be assessed as part of the normal watchstanding routine, and should therefore not be a required practical demonstration to obtain a license or certificate, other than to properly perform the operation.

II. Starting up a refrigeration system

1. Checks oil level in compressor crankcase and takes required corrective actions		
2. Lines up condenser seawater circulating system		
3. Opens valves in suction and discharge lines		
4. Closes condenser water vents and drains		
5. Lines up refrigerant system valves for normal system operation		
6. Leaves compressor suction stop valve closed		
7. Starts seawater circulating through condenser		
8. Vents air from condenser water heads		
9. Starts fans in refrigerated compartments		
10. Starts pumps in brine or chilled water systems		
11. Checks electrical power supply to compressor and solenoid valves		
12. Ensures suction and discharge are open		
13. Starts compressor in "Automatic" mode		
14. Observes system operation carefully for at least five minutes		

~~15. Checks oil level in compressor crankcase and takes corrective actions if necessary~~		
~~16. Correctly describes actions as they are being performed~~		
~~17. No safety violations are observed~~		

III. Securing refrigeration system

~~1. Closes main liquid line stop valve and allows compressor to run until properly de-energized by low pressure switch~~		
~~2. Secures power to compressor motor~~		
~~3. Secures condenser seawater circulating system~~		
~~4. Closes all appropriate refrigeration valves~~		
~~5. Correctly describes actions as they are being performed~~		
~~6. No safety violations are observed~~		

COMMENT - Checklist IV and V: The checklists for starting and securing an air compressor need to be changed for the following reasons: 1) The checklists do not refer to the nature of the system being used, i.e. low pressure versus medium pressure systems. 2) The system operating pressure dictates whether or not they are "air cooled" or "water cooled". 3) While any type of prime mover can be used throughout any particular industry, electric motors have **ALWAYS** been used aboard ship to drive an air compressor and therefore these units do not have or are otherwise are required to have an "over speed" trip.

IV. Starting an air compressor

1. Checks oil reservoirs and (if necessary) fills to proper level with correct grade of oil		
~~2. Sets over~~ speed tripping device ~~(if provided)~~		
3. Ensures power off, ~~and~~ checks belts for excessive sagging and proper position in pulley wheels, and jacks compressor over by hand, if applicable		
~~4. Turns on cooling water to the cooling system~~ NOTE: in medium pressure compressed air systems (150 ps ito 900 psi) such as those used for diesel engine air starting, the cooling water is supplied by a separate general service, salt water cooling, or separate fresh water cooling system and do not have a separate supply pump.		
~~5. Vents system properly~~ NOTE: on compressed air side of the system, "venting" is a function of the unloading system, otherwise the vents would be provided at the highest point of the cooling water circuit, but only if the compressor is indicated as being installed in at least a medium pressure system.		
~~6. Opens all air system stop valves~~ NOTE: Only if the system is medium pressure		
~~6.~~7. NOTE: Still needs to address positioning of auto start/stand-by switch, depressing the "start" button..		
~~7.~~8. Drains and removes all accumulations of moisture or oil from the separators and air receivers		
~~8.~~9. Correctly describes actions as they are being performed		
~~9.~~10. No safety violations are observed		

V. Securing air compressor *(Checklists needs to be revised and/or clarified)*

~~1. Turns power off~~		

~~2. Turns off cooling water to cooling water system~~		
~~3. Vents system properly~~		
~~4. Closes all air system stop valves~~		
~~5. Correctly describes actions as they are being performed~~		
~~6. No safety violations are observed~~		

VI. Starting up and placing fresh water generator on line

1. Lines up salt water feed system and starts salt water feed pump to fresh water distiller		
2. Lines up brine overboard system and starts brine overboard pump		
3. Adjusts brine overboard discharge valve to maintain proper level in bottom of flash chambers		
4. Opens steam root valve to distiller unit steam air ejectors		
5. Opens steam ~~supplies~~ supply valves to salt water feed heater after salt water feed heater shell vacuum is greater than 75% of normal operational vacuum		
6. Applies and regulates de-superheater if "live" steam supply is provided to salt water feed water heater		
7. Lines up and regulates salt water feed heater low pressure drain as required		
8. Adjusts salt water flow to maintain minimum temperature of 165° F to first stage		
9. Observes feed water spray pattern and water level at bottom of flash chamber		
10. Regulates brine overboard pump discharge to maintain seal and brine level in first and second stages		
11. Energizes salinity indicating panel and verifies three-way dump valve is tripped and discharging to bilge		
12. Starts distillate pump when pump static suction line gage glass is at least half full		
13. Adjusts salt water feed temperature and brine overboard flow rate to correct levels and rates; monitors distillate pump output salinity level		
14. Verifies tanks to be replenished are lined-up		
15. Engages three-way dump valve when distillate level is below 4.24 PPM (.25 GPG)		
16. Records meter reading once discharge to tanks has been established		
17. Verifies salinity meter reading by chemical test comparison with distillate sample		
18. Correctly describes actions as they are being performed		
19. No safety violations are observed		

VII. Securing fresh water generator system

1. Trips three-way solenoid valve ~~Close steam supplies valve to salt water~~		
~~1.~~2.Closes steam supply valve to salt water feed heater		
~~2.~~3.Close steam root valve to distiller unit steam air ejectors		
~~2.~~4.Stops distillate pump motor		
~~3.Secure condensate pump~~		
~~4.~~5.Closes ~~condensate~~ distillate pump discharge valve and verifies desuperheater control valve is closed		
~~5.~~6.~~Secure distillate pump~~		

~~6.~~7.Close distillate pump discharge valve		
~~7.~~8.~~Secure~~ Secures feed and brine pumps~~, and close~~ opens feedwater inlet valve to first stage and closes brine pump overboard discharge valve		
~~8.9.Drain unit if shutdown is for a prolonged period~~		
20. Correctly describes actions as they are being performed		
21. No safety violations are observed		

VIII. Preparing main diesel engine operation for departure

NOTE: It would be better to provide a checklist for both low speed and medium speed engines as there are enough differences in the arrangements and the equipment of the two plants. Hence the following checklist is NOT relevant or meaningful as there has been no attempt to identify which type of engine is to be started.

1. Completes all necessary checks on cooling water system and associated equipment		
(a) Checks all valves to ensure system is lined up for operation		
(b) Starts required motor-driven cooling water pump, if provided or necessary		
(c) Ensures systems have adequate pressure and flow available		
(d) Vents cooling water heat exchangers, using the vent cocks or vent valves on the heat exchanger shells		
(e) Re-checks water level in fresh water expansion tanks for adequacy		
(f) Verifies above actions are indicated on control panel		
2. Completes all necessary checks on lube oil system		
(a) Checks all valves and pumps are lined up for proper operation		
(b) Ensures cooling water system is on line and operational		
(c) Checks sump level for adequate supply		
(d) Checks all necessary temperatures and pressures for normal operating conditions		
(e) Verifies above actions are indicated on control panel		
3. Completes all necessary checks on fuel oil system		
(a) Lines up and primes fuel system		
(b) Checks to ensure sufficient clean fuel for anticipated engine operation is available; starts fuel oil purifier systems and transfer system		
(c) Checks heaters, filters, and pumps for acceptable operations		
(d) Vents heaters		
(e) Checks temperatures and pressure for normal operating conditions		
(f) Verifies above actions are indicated on control panels		
4. Completes all necessary checks on the air system		
(a) Checks to ensure all tanks are charged		
(b) Checks valves to ensure system is properly lined up		
(c) Checks compressor for proper line up and operation		

(d) Checks associated systems (reducers, dryers) for proper operation and flow		
(e) Verifies above actions are indicated on control panel		
5. Checks all auxiliary equipment, turbo-charger, auxiliary boiler and sub systems are readied and properly lined up		
6. Verifies all system indicators and alarm systems for proper operations		
7. Rotates engine on jacking gear		
8. Checks indicator cocks for water		
9. Performs blowdown		
10. Takes appropriate actions to eliminate moisture		
11. Disengages jacking gear and restores valves and cocks to their operating positions		
12. Starts engine, following all proper procedures for the type of starting system in use and in accordance with the manufacturer's recommendations, ship's procedures and standing orders		
13. Verifies EOT setting with bridge		
14. Correctly describes actions as they are being performed		
15. No safety violations are observed		

IX. Securing an operating main diesel engine

SEE NOTE FOR VIII ABOVE

1. Acknowledges EOT order for securing		
2. Stops engine in accordance with the manufacturer's procedures and recommendations UNSAT		
3. Secures start air system (electrical or air); drains start air system if applicable		
4. Completes post lubrication and cool down procedures as per manufacturer's instructions UNSAT		
5. Opens indicator cocks and engages jacking gear		
6. Secures or adjusts lube oil, fuel oil, and cooling water systems as required or meets anticipated needs by keeping required systems running UNSAT		
7. Verifies above actions are indicated on control panel		
8. Correctly describes actions as they are being performed		
9. No safety violations are observed		

X. Preparing a main steam turbine engine for maneuvering and control

1. Starts main lube oil pump		
2. Verifies flow through gravity tank overflow line using sight glass		
3. Verifies lube oil flow ~~for~~ to all main engine bearings using sight glass		
4. Engages jacking gear to main engine		
5. Makes notification of jacking gear status		
6. Turns on jacking gear motor		
7. Establishes steam flow to gland seal regulator and adjusts to 1.5 psig		
~~7.~~8.Starts gland exhaust condenser fan		
~~8.~~9.Verifies main circulator high suction and overboard discharge valves are open		

~~9.~~10. Starts main circulator pump		
~~10.~~11. Opens main condenser salt water header vents until flow is observed		
~~11.~~12. Verifies main condensate pump suction and discharge stop valves are open		
~~12.~~13. Verifies main condensate pump vent line valve is open		
~~13.~~14. Starts main condensate pump		
~~14.~~15. Cracks open main condensate recirculating valve ~~to relieve pressure~~ NOTE: as stated this is not the function of the recirc and in no way should be included as part of the checklist or even training		
~~15.~~16. Opens inlet/outlet valves to both first and second stage air ejector elements		
~~16.~~17. Lines up steam to air ejector pressure reducing station		
~~17.~~18. Opens steam root valve to second stage main air ejector element		
~~18.~~19. ~~Starts gland exhaust condenser fan~~		
~~19.~~20. Observes progressive increase in vacuum		
~~20.~~21. Inspects entire system for proper operation		
~~21.~~22. Correctly describes actions as they are being performed		
~~22.~~23. No safety violations are observed		

XI. Monitoring main steam turbine engine while underway

1. Checks all main engine and reduction gear bearing thermometers to detect signs of overheating		
2. Checks oil sight-flow indicators for proper oil flow		
3. Checks clearance indicators for proper rotor position		
4. Checks all thermometers, pressure gages and vacuum gages for readings within operating ranges		
5. Checks oil level in main sump		
6. Maintains proper water level in de-aerating feed tank		
7. Constantly monitors salinity indicators		
8. Checks lube oil temperature from lube oil cooler, maintains oil temperature at 110°F to 130°F		
9. Checks pressure of cooling water main		
10. Constantly alert for and reports unusual sounds and vibrations		
11. Cleans ~~lube oil and~~ bilge strainers on each watch; reports abnormal conditions NOTE: Unless the differential pressure gages to the lube strainers indicate a steady rising and/or significant increase in the pressure differential, the main lube oil strainers **SHOULD ONLY BE OPENED** and cleaned with the L.O. system and main engine secured		
12. Correctly describes actions as they are being performed		
13. No safety violations are observed		

XII. Securing main steam turbine

COMMENT: NEEDS A GREAT DEAL OF WORK – STEP 3 IN THIS CHECKLIST MUST BE ONE OF THE FIRST STEPS, #4 IS INACCURATE AS STATED AND MANY OTHER STEPS ARE MISSING

1. ~~Secures the air ejectors~~		

2. ~~Closes steam supply to gland sealing steam~~		
3. ~~Closes main steam stop valve~~		
4. ~~Opens all main steam line and turbine casing drains~~		
5. ~~Engages jacking gear~~		
6. ~~Correctly describes actions as they are being performed~~		
7. ~~No safety violations are observed~~		

XIII. Assisting in lighting off a main boiler

COMMENT: Began to provide a recommendation to modify the steps listed below, but there are numerous items requiring change that the overall comment will merely be made and state that this needs a significant revision

1. Completes all steps necessary to prepare boiler for light off and raising steam pressure		
(a) Insures boiler is closed		
(b) Checks boiler water level ~~and opens steam pressure root valves~~ NOTE: this is a separate step related to the F.O. service system		
(c) Opens air cock, superheater vents and drains		
(d) Lines up boiler properly NOTE: identifies what is supposedly to be done as an overall process and is too vague as a procedure		
2. Initiates proper procedure for lighting-off idle boiler		
(a) Verifies that ~~Closes~~ bottom blow, surface blow and any header drains are closed. NOTE UNLESS SPECIFIC WORK WAS DONE ON THE BOILER, THESE VALVES ARE NORMALLY CLOSED		
(b) Eases off and closes steam stops		
(c) Closes auxiliary and feed checks INCORRECTLY STATED		
(d) Opens boiler water level gauge INCORRECTLY STATED		
(e) Makes up and installs atomizer		
(f) Closes burner and root fuel valves INCORRECTLY STATED		
(g) Lines up fuel oil system correctly INCORRECTLY STATED		
(h) Checks air damper and opens register door		
(i) Opens burner and root valves on most centrally located burner prior to light off		
3. Lights-off boiler, adjusts for proper combustion; places boiler on line when needed		
~~(a) Inspects fire through peep hole for proper color~~ INCORRECT		
~~(b) Secures fuel oil recirculating line~~		
~~(c) Checks through periscope for proper smoke color and clarity~~		
~~(d) Reports when boiler pressure rises to between 15 to 20 psi;~~		
~~(e) Closes air cock and throttle superheater drains~~		
4. Completes process of placing boiler on line		
5. Correctly describes actions as they are being performed		
6. No safety violations are observed		

XIV. Securing a main boiler

COMMENT: SAME AS FOR XIII ABOVE

1. Requests and receives permission to secure the main boiler		
2. Blows tubes properly		
3. Secures oil to burners and cuts fires		
4. Leaves air registers opened to make certain all oil has been burned and furnace gases purged		
5. Secures all forced draft fans and closes dampers		
6. Removes and cleans atomizer		
7. Opens superheater vents wide and cracks superheater drains IF THIS WERE DONE IN THIS ORDER WE JUST RUPTURED OR MELTED THE TUBES		
8. Secures main stops and auxiliary steam stops, as boiler steam pressure drops		
9. Opens steam drum air vent cocks when pressure has dropped to about ~~50~~ 30 PSI		
10. Maintains proper water level once boiler is cool~~inged~~		
11. Correctly describes actions as they are being performed		
12. No safety violations are observed		

XV Performing a "blow down" of a water gage glass to check water level

1. Closes top cutout valve and opens drain at the bottom assembly		
2. Opens top cutout valve and closes bottom cutout valve		
3. Closes drain valve		
4. Opens bottom cutout valve to allow water to enter the gage		
5. Checks water level against the level shown on the other gage or on the remote water level indicator		
6. Correctly describes actions as they are being performed		
7. No safety violations are observed		

XVI. Responding to a high water level casualty

COMMENT: WHILE THE STEPS FOR THE BOILER CASUALTY ARE BEING DONE, THERE ARE OTHER STEPS INVOLVED IN SLOWING THE MAIN ENGINE IF ONLY ONE BOILER IS AFFECTED AND INCREASES EXPONENTIALLY IF BOTH BOILERS ARE AFFECTED.

ALSO, THIS IS OBVIOUSLY NOT AN ORDINARY OPERATION. TO ATTEMPT TO ASSESS A TRAINEE IF DONE ABOARD SHIP WOULD PLACE THE SHIP IN GREAT PERIL. WITH THE EXCEPTION OF THE SIMULATOR AT CALIFORNIA MARITIME ACADEMY *(OPENING AND CLOSING VALVES ON THE MAJORITY OF ENGINE ROOM SIMULATORS USE A POINT AND CLICK INPUT FROM A MOUSE. AS FEEDWATER VALVE REACH RODS ARE MOUNTED UPSIDE DOWN TO FACILITATE VIEWING THE GAGE GLASSES SIMULTANEOUSLY, THE APPROPRIATE FEEDBACK TO THE CANDIDATE IS MISSING – THE ONLY ADVANTAGE OF SIMULATING THIS EXERSIZE VERSUS HAVING THE CANDIATE WRITE DOWN OR EXPLAIN THE STEPS IS THAT THE SIMULATION ELEVATES THE LEARNING FROM PURE ROTE*

MEMORIZATION TO AT LEAST REINFORCING THE GRAPHIC PROCESS.) **NOT ONE OTHER SIMULATOR CAN EFFECTIVELY APPROXIMATE THE NECESSARY RESPONSES REQUIRED TO MEET THIS EMERGENCY CONDITION, LET ALONE TO PROVIDE ASSESSMENT OF THE CANDIDATE'S ABILITY TO CORRECTLY REACT.**

1. Shuts off oil supply to all burners via the quick closing valves		
2. Closes feed check valve		
3. Opens superheater vent valve		
4. Closes boiler main steam stop valve		
5. ~~Closes all burner register doors~~ NO		
6. ~~Secures force draft fan~~ NO		
7. Opens ~~blowdown skin valve and surface blowdown valve~~ Bottom blow over board skin, bottom blow, and water wall bottom header valves. NOTE surface blowdown line typically ¾ inch or less, high water level needs to be reduced as quickly as possible.		
8. Monitors water level in ~~sight~~ gage glass		
9. ~~Closes surface blow valve and skin valve when water level falls to normal~~ Rewrite		
10. Opens superheater drains to expel any carry over		
~~10.~~11. How about relighting and getting back underway 12.		
~~11.~~13. Correctly describes actions as they are being performed		
~~12.~~14. No safety violations are observed		

XVII. Responding to a low water level casualty

COMMENT: WHILE THE STEPS FOR THE BOILER ARE BEING DONE, THERE ARE OTHER STEPS INVOLVED IN SLOWING THE MAIN ENGINE IF ONLY ONE BOILER IS AFFECTED AND INCREASES EXPONENTIALLY IF BOTH BOILERS ARE AFFECTED.

ALSO, THIS IS OBVIOUSLY NOT ORDINARY OPERATION. TO ATTEMPT TO ASSESS A TRAINEE IF DONE ABOARD SHIP WOULD PLACE THE SHIP IN GREAT PERIL. WITH THE EXCEPTION OF THE SIMULATOR AT CALIFORNIA MARITIME ACADEMY, NOT ONE OTHER SIMULATOR CAN APPROXIMATE THE NECESSARY RESPONSE REQUIRED TO MEET THIS EMERGENCY CONDITION, LET ALONE TO PROVIDE ASSESSMENT OF THE CANDIDATES ABILITY TO CORRECTLY REACT.

1. Shuts off the oil supply to all burners via the quick closing valves		
2. Closes the feed check valve JUST LOST THE BOILER BY THIS ACTION		
3. Opens superheater vent valve		
4. Closes boiler main steam stop valve WASTE OF TIME, THESE ARE STOP CHECK VALVES THAT SHUT AUTOMATICALLY		
5. Opens safety valves by hand CAUSES MORE WATER TO BE LOST		
6. Relieves boiler pressure REPEATS #5		

7. Closes all burner register doors		
8. Secures force draft fan		
9. Correctly describes actions as they are being performed		
10. No safety violations are observed		

XVIII. Transferring fuel oil

COMMENT: WHILE THEY SHOULD KNOW HOW TO DO THIS, THE TASK IS THAT OF THE SECOND A/E'S JOB AND SHOULD NOT BE A PRACTICAL DEMONSTRATION ASSESSMENT AT THIS TIME.

1. Lines up fuel oil transfer pump and fuel oil manifold to take a suction on the desired fuel oil storage tank or fuel oil settling tank as directed		
2. Lines up fuel oil transfer pump to discharge to the desired settling or service pump tank as directed		
3. Determines fuel oil settling or service tank level		
4. Starts fuel oil transfer pump		
5. Checks fuel oil transfer pump suction and discharge pressures to determine that the pump picks up suction		
6. Monitors fuel oil settling or service tank level		
7. Stops fuel transfer pump when fuel settling or service tank approaches full		
8. Restores fuel transfer system piping back to normal.		

XIX. Fuel Oil Double Bottom Tank Deballasting operations

COMMENT: FUEL OIL TANKS ARE FILLED WITH BALLAST AFTER ALL FUEL HAS BEEN REMOVED AND THEN DEBALLASTED PRIOR TO TAKING ON FUEL, OTHERWISE TANKSHIP BALLASTING OPERATIONS ARE EXECUTED BY THE DECK OFFICERS

1. Lines up ballast pump suction manifold and /or suction piping to take a suction on the ballast tank fill and drain manifold		
2. Lines up ballast pump discharge manifold to direct flow sea water overboard		
3. Lines up ballast tank fill and drain manifold to drain those ballast tanks as directed		
4. Starts ballast pump		
5. Stops ballast pump when tanks are emptied ~~vessel is brought up to desired draft marks~~		
6. Restores ballast system piping back to normal		

XX. Fuel Oil Double Bottom Tank Ballasting operations

COMMENT: FUEL OIL TANKS ARE FILLED WITH BALLAST AFTER ALL FUEL HAS BEEN REMOVED AND THEN DEBALLASTED PRIOR TO TAKING ON FUEL, OTHERWISE TANKSHIP BALLASTING OPERATIONS ARE EXECUTED BY THE DECK OFFICERS

1. Lines up ballast pump suction manifold and /or suction piping to take a suction on an appropriate seachest		
2. Lines up ballast pump discharge manifold and/or piping to direct flow to the ballast tank fill and drain manifold		
3. Lines up ballast tank fill and drain manifold tot hose ballast tanks as directed		

4. Starts ballast pump		
5. Stops ballast pump when vessel is brought down to desired draft marks		
6. Restores ballast system piping back to normal		

XXI. Pumping out engine room bilge wells

1. Sounds bilge water collecting tank to insure it is capable of accommodating bilge water without overflowing		
2. Lines up bilge system to take a suction from desired bilge well, and discharge to the bilge water collecting tank		
3. Primes bilge pump if necessary		
4. Starts bilge pump		
5. Monitors bilge pump suction and discharge pressure gauges to insure bilge pump has picked up suction		
6. Monitors bilge pocket level		
7. Stops bilge pump when bilge pocket has been pumped dry		
8. Restores bilge system valve line up back to normal		

XXII. Pumping out cargo space or shaft alley bilge wells

1. Sounds bilge water collecting tank to insure it is capable of accommodating bilge water without overflowing		
2. Lines up bilge system to take a suction from desired bilge well, and discharge to the bilge water collecting tank		
3. Primes bilge pump if necessary		
4. Starts bilge pump		
5. Monitors bilge pump suction and discharge pressure gauges to insure bilge pump has picked up suction		
6. Monitors bilge pocket level		
7. Stops bilge pump when bilge pocket has been pumped dry		
8. Restores bilge system valve line up back to normal		

XXIII. Starting an Emergency Generator

COMMENT: WITH THE EXCEPTION OF PARALLELING DISCUSSED IN XXVII, THE PRIME MOVER INSPECTION AND START UP PROCEDURE IS ESSENTIALLY THE SAME FOR THE E/G AS FOR THE SSDG

1. ~~Properly conducts pre-start routine inspection of emergency diesel generator~~		
2. ~~Correctly starts and operates generator in accordance with the manufacturer's instructions or approved procedure~~		
3. ~~Correctly describes actions as they are being performed~~		
4. ~~No safety violations are observed~~		

XXIV. Conducting a pre-start inspection of a diesel generator

1. Inspects generator for loose cable connections, brush rigging as fitted and foreign or		

loose items that may damage unit during start up		
2. Inspects couplings between reduction gear and alternator for readiness		
3. Inspects governor linkage, reduction gear casing, and bearing housings for indications of lubrication leaks		
4. Manually trips overspeed and resets trip to determine if mechanism operates without binding		
5. Checks level of lube oil in sump and adds necessary lube oil		
6. Starts pre lube pump checks for pressure leaks and proper flow		
7. Opens indicator cocks and rolls over engine		
8. Correctly describes actions as they are being performed		
9. No safety violations are observed		

XXV. Conducting a pre-start inspection of steam turbo generator

~~10.~~Inspects generator for loose cable connections, brush rigging as fitted and foreign or loose items that may damage unit during start up		
~~11.~~Inspects couplings between reduction gear and alternator for readiness		
~~12.~~Inspects governor linkage, reduction gear casing, and bearing housings for indications of lubrication leaks		
~~13.~~Manually trips overspeed and resets trip to determine if mechanism operates without binding		
~~14.~~Checks level of lube oil in sump and adds necessary lube oil		
~~1.~~Starts auxiliary circulator		
~~2.~~Vents condenser heads and reports stability of circulated water pressure		
~~3.~~Starts auxiliary condensate pump		
~~4.~~Adjusts recirculating valve to maintain visible level of condensate in hot well		
~~5.~~Applies gland seal steam to turbine rotor		
~~6.~~Admits operating steam to air injectors, adjusting supply pressure as necessary		
~~7.~~Determines visible level in hot well, adjusting recirculating valve as necessary		
~~8.~~Correctly describes actions as they are being performed		
~~9.~~No safety violations are observed		

XXVI. Starting and connecting ship's service diesel generator to main switchboard

COMMENT: AS PART OF THE TRAINING PROCESS AS OICEW, THIS PARTICULAR ITEM IS ESSENTIAL TO BE KNOWLEDGEABLE OF AND UNDERSTAND, BUT IT IS **NOT** ONE OF THOSE OPERATIONS WHICH IS FREQUENTLY CONDUCTED AS DESCRIBED. IT IS ALSO NOT THE DIRECT RESPONSIBILITY OF THE OICEW AS MUCH AS IT IS FOR THE CHIEF ENGINEER OR THE FIRST ASSISTANT ENGINEER.

1. ~~Completes pre-start routine and inspection of emergency diesel generator~~		
2. ~~Conducts inspection to insure all support systems are lined up to operate emergency generator~~		
3. ~~Starts generator and operates in accordance with the manufacturer's instructions~~		
4. ~~Disconnects all large and unnecessary load~~		
5. ~~Closes circuit breaker~~		

6. ~~Monitors, brings loads in reverse order (large to small)~~		
7. ~~Correctly describes actions as they are being performed~~		
8. ~~No safety violations are observed~~		

XXVII. Paralleling an in-coming unit with operating unit

1. Adjusts voltage of in coming machine		
2. Turns synchroscope on to in coming machine and correctly observes direction and speed of rotation		
3. Adjusts speed and direction of rotation in prime mover		
4. Closes oncoming unit breaker to stop synchroscope at 12 o'clock position		
5. Divides KW load and reactive load using available switch board meters		
6. Correctly describes actions as they are being performed		
7. No safety violations are observed		

XXVIII. Performing maintenance on a centrifugal pump

COMMENT: AS PART OF THE TRAINING PROCESS AS OICEW, THIS PARTICULAR ITEM IS ESSENTIAL TO BE KNOWLEDGEABLE OF AND UNDERSTAND, BUT IT IS **NOT** ONE OF THOSE OPERATIONS WHICH IS CONDUCTED WITH REGULAR FREQUENCY ONBOARD A VESSEL AND WHERE PRACTICAL IT SHOULD BE PART OF A LAB ASSIGNMENT. WHILE IT IS ESSENTIAL FOR THE OICEW TO BE ABLE TO ASSIST IN DISASSEMBLING AND ASSEMBLING A PUMP CORRECTLY, THIS PARTICULAR ITEM IS NOT IN LINE AS AN ASSESSED PRACTICAL DEMONSTRATION.

NOTE: The process listed below is so abridged that it is similar to trying to force 5 pounds of sugar into a two-pound bag.

1. Isolates and dismantles centrifugal pump in accordance with manufacturer's instructions and recommended procedures NOTE: This item is a waste of time to provide if this is all that the statement establishes.		
2. Examines components for wear, damage, or deterioration		
3. Re-fits component, ~~checking end clearances and backlash~~ The strikethrough terms are fine if one is speaking gear trains		
4. Replaces and adjusts seals properly		
5. Reassembles pump correctly		
6. ~~Tests and runs pump making necessary adjustments to achieve satisfactory operation~~ NOTE: As stated, if the pump continues to fail "to achieve satisfactory" performance, then the pump must be disassembled, re-inspected, and reassembled. Problem is that the wrong analysis was made as to why the pump was failing to produce flow – this becomes a troubleshooting requirement that resides with the Second Engineer (1st A/E US) or Chief Engineer		
7. Actions are described correctly as they are being performed		
8. Actions taken lead to full restoration of centrifugal pump by methods most suitable and appropriate to the prevailing circumstances and conditions NOTE: This item is a waste of time to provide if this is all that the statement establishes.		
9. No safety violations are observed		

XXIX. Performing maintenance on a reciprocating pump

COMMENT: AS PART OF THE TRAINING PROCESS AS OICEW, THIS PARTICULAR ITEM IS ESSENTIAL TO BE KNOWLEDGEABLE OF AND UNDERSTAND, BUT IT IS NOT ONE OF THOSE OPERATIONS WHICH IS CONDUCTED WITH REGULAR FREQUENCY ONBOARD A VESSEL AND WHERE PRACTICAL IT SHOULD BE PART OF A LAB ASSIGNMENT. WHILE IT IS ESSENTIAL FOR THE OICEW TO BE ABLE TO ASSIST IN DISASSEMBLING AND ASSEMBLING A PUMP CORRECTLY, THIS PARTICULAR ITEM IS NOT IN LINE AS AN ASSESSED PRACTICAL DEMONSTRATION.

NOTE: THE PROCESS LISTED BELOW IS SO ABRIDGED THAT IT IS SIMILAR TO TRYING TO FORCE 5 POUNDS OF SUGAR INTO A TWO-POUND BAG.

1. Isolates and dismantles reciprocating pump in accordance with manufacturer's instructions and recommend procedures		
2. Examines components for wear, damage, or deterioration		
3. Re-fits components, checking end clearances and backlash		
4. Replaces and adjusts seals properly		
5. Reassembles pump correctly		
6. Tests and runs pump making necessary adjustments to achieve satisfactory operation		
7. Actions are described correctly as they are being performed		
8. Actions taken lead to full restoration of reciprocating pump by methods most suitable and appropriate to the prevailing circumstances and conditions		
9. No safety violations are observed		

XXX. Inspecting a valve manifold

COMMENT: AS PART OF THE TRAINING PROCESS AS OICEW, THIS PARTICULAR ITEM IS ESSENTIAL TO BE KNOWLEDGEABLE OF AND TO UNDERSTAND, BUT IT IS **NOT** ONE OF THOSE OPERATIONS WHICH IS CONDUCTED WITH REGULAR FREQUENCY ONBOARD A VESSEL AND WHERE PRACTICAL IT SHOULD BE PART OF A LAB ASSIGNMENT. WHILE IT IS ESSENTIAL FOR THE OICEW TO BE ABLE TO ASSIST IN FINDING FAULTS IN A VALVE MANIFOLD CORRECTLY, THIS PARTICULAR ITEM IS NOT IN LINE AS AN ASSESSED PRACTICAL DEMONSTRATION.

1. Removes any lagging, shrouding or insulation		
2. Correctly identifies contents of pipe –Should have been done prior to anything else		
3. Isolates section of pipe and "tags out" properly		
4. Relieves pressure and drains pipe section		
5. Dismantles flanges, screw connections, etc.		
6. Cleans and inspects internally		
7. Cleans and prepares joint faces for reassembly		
8. Selects and applies appropriate jointing material		
9. Reassembles correctly		
10. Checks pipe supports for adequacy		
11. Hydraulically tests for leaks		
12. Replaces any lagging and shrouding removed earlier		
13. Correctly describes actions as they are being performed		
14. Actions taken lead to the full restoration of piping system by methods most suitable and		

appropriate to the prevailing circumstances and conditions		
15. No safety violations are observed		

XXXI. Performing maintenance on valve

COMMENT: AS PART OF THE TRAINING PROCESS AS OICEW, THIS PARTICULAR ITEM IS ESSENTIAL TO BE KNOWLEDGEABLE OF AND TO UNDERSTAND, BUT IT IS **NOT** ONE OF THOSE OPERATIONS WHICH IS CONDUCTED WITH REGULAR FREQUENCY ONBOARD A VESSEL AND WHERE PRACTICAL IT SHOULD BE PART OF A LAB ASSIGNMENT. WHILE IT IS ESSENTIAL FOR THE OICEW TO BE ABLE TO ASSIST IN DISASSEMBLING AND ASSEMBLING A VALVE TO BE OVERHAULED CORRECTLY, THIS PARTICULAR ITEM IS NOT IN LINE AS AN ASSESSED PRACTICAL DEMONSTRATION.

1. Isolates and dismantles valve in accordance with manufacturer's instructions and recommended procedures		
2. Examines seats, valve~~,~~ ~~spindles~~ stems, and glands for proper ~~operating~~ condition		
3. ~~Correctly machines valve and seats~~ As part of a sea project this would be valid, but not cost effective unless the valve design or size were so unique that an onboard spare were not available requiring a new part to be machined. Due to the number of variables requiring the overhaul of the valve, this checklist is impractical		
4. "Beds in" valve on seats using grinding paste		
5. Removes defective or worn gland packing		
6. Selects correct gland packing replacement		
7. Repacks gland properly		
8. Reassembles valve correctly		
9. Tests valve for leaks and proper operation		
10. Correctly describes actions as they are being performed		
11. Actions taken lead to the full restoration of valves by methods most suitable and appropriate to the prevailing circumstances and conditions.		
12. No safety violations are observed		

XXXII. Performing overhaul on heat exchanger

COMMENT: AS PART OF THE TRAINING PROCESS AS OICEW, THIS PARTICULAR ITEM IS ESSENTIAL TO BE KNOWLEDGEABLE OF AND TO UNDERSTAND, BUT IT IS NOT ONE OF THOSE OPERATIONS WHICH IS CONDUCTED WITH REGULAR FREQUENCY ONBOARD A VESSEL AND WHERE PRACTICAL IT SHOULD BE PART OF A LAB ASSIGNMENT. WHILE IT IS ESSENTIAL FOR THE OICEW TO BE ABLE TO ASSIST IN DISASSEMBLING AND ASSEMBLING A HEAT EXCHANGER CORRECTLY, THIS PARTICULAR ITEM IS NOT IN LINE AS AN ASSESSED PRACTICAL DEMONSTRATION.

1. Isolates and dismantles heat exchanger in accordance with manufacturer's instructions and recommend procedures		
2. Dismantles and examines for leakage, corrosion, erosion, or fouling Too general		
3. Checks provision for tube expansion only necessary if tubes have begun to leak		
4. Descales, replaces tubes, plugs tubes, secures tube tightness in tube plates, and checks means for reducing corrosion		

5. Reassembles heat exchanger correctly		
6. Fills and tests exchanger		
7. Correctly describes actions as they are being performed		
8. Actions taken lead to the full restoration of heat exchanger by methods most suitable and appropriate to the prevailing circumstances and conditions.		
9. No safety violations are observed		

XXXIII. Performing scheduled maintenance of a diesel engine

COMMENT: AS PART OF THE TRAINING PROCESS AS OICEW, THIS PARTICULAR ITEM IS ESSENTIAL, BUT IT IS NOT ONE OF THOSE OPERATIONS WHICH IS CONDUCTED WITH REGULAR FREQUENCY. WHILE IT IS ESSENTIAL FOR THE OICEW TO BE KNOWLEDGEABLE OF AND TO UNDERSTAND AND TO BE ABLE TO ASSIST IN DISASSEMBLING AND ASSEMBLING AN ENGINE CORRECTLY, THIS PARTICULAR ITEM IS NOT IN LINE AS AN ASSESSED PRACTICAL DEMONSTRATION, PARTICULARLY AS THE CANDIDATE SHOULD BE ASSISTING BUT NOT BEING JUDGED ON THEIR ABILITY TO PERFORM AN EXTREMELY TIME CONSUMING AND COMPLEX TASK WHEN THIS IS THE RESPONSIBILITY OF THE SECOND ENGINEER (1st A/E U.S.) or CHIEF ENGINEER.

1. Isolates and dismantles plant and equipment in accordance with manufacturer's instructions and recommended procedures		
2. Inspects all parts, including pistons, rings, liners, bearing, valves, cooling passages, crankshaft and lubrication system for wear and deterioration		
3. Makes needed repairs, replacements, or adjustments, as required in accordance with manufacturer's instructions and specifications, recommended procedures and good practice		
4. Reassembles engine		
5. Checks timing and ascertains freedom of movement		
6. Checks level and condition of lubrication oil		
7. Checks and adjusts all clearances and tolerances		
8. Purges air from fuel system		
9. Conducts appropriate pre-operational tests		
10. Correctly describes actions as they are being performed		
11. Actions taken lead to the full restoration of diesel engine by methods most suitable and appropriate to the prevailing circumstances and conditions.		
12. No safety violations are observed		

XXXIV. Performing overhaul on the turbocharger

COMMENT: AS PART OF THE TRAINING PROCESS AS OICEW, THIS PARTICULAR ITEM IS ESSENTIAL TO BE KNOWLEDGEABLE OF AND TO UNDERSTAND, BUT IT IS NOT ONE OF THOSE OPERATIONS WHICH IS CONDUCTED WITH REGULAR FREQUENCY. WHILE IT IS ESSENTIAL FOR THE OICEW TO BE ABLE TO ASSIST IN DISASSEMBLING AND ASSEMBLING A TURBO CHARGER CORRECTLY, THIS PARTICULAR ITEM IS NOT IN LINE AS AN ASSESSED PRACTICAL DEMONSTRATION, PARTICULARLY AS THE CANDIDATE SHOULD BE ASSISTING BUT NOT BEING JUDGED ON THEIR ABILITY TO PERFORM AN EXTREMELY TIME CONSUMING AND COMPLEX TASK WHEN THIS IS THE RESPONSIBILITY OF THE SECOND ENGINEER (1st A/E U.S.) or

CHIEF ENGINEER.

1. Isolates and dismantles turbocharger in accordance with manufacturer's instructions and recommend procedures		
2. Examines all parts including air filter, air casing, inducer, impeller, volute, diffuser, gas inlet grid, nozzle ring, rotor, and bearings for wear, deterioration, erosion, corrosion, hard deposits, damage, obstructions, and lubrication		
3. Reassembles turbocharger correctly		
4. Checks all clearances and tolerances		
5. Ascertains freedom of movement		
6. Performs operational test		
7. Correctly describes actions as they are being performed		
8. Actions taken lead to the full restoration of turbocharger by methods most suitable and appropriate to the prevailing circumstances and conditions.		
9. No safety violations are observed		

XXXV. Draining scavenging air receivers of oil accumulation

COMMENT: NOT CORRECT FOR A LOW-SPEED ENGINE

1. Places suitable container at scavenging air receiver drain to collect oil drippings		
2. Opens scavenging air receiver drains		
3. Observes oil outflow from drain for discoloration from water or metallic particles		
4. Closes drain when oil ceases to flow		
5. Removes oil drippings container and properly disposes of oil		
6. Reports any abnormal conditions		
7. Correctly describes actions being executed as they are being performed		
8. Actions taken lead to the full restoration of scavenging air receiver by methods most suitable and appropriate to the prevailing circumstances and conditions.		
9. No safety violations are observed		

XXXVI. Performing routine maintenance on start and clutch air system

COMMENT: NEEDS WORK BASICALLY #2 AND #5 ARE REPETITIVE, OTHER STATEMENTS ARE VAGUE AND OVER GENERALIZED, SHOULD HAVE BEEN PART OF PREPARING ENGINE AND/OR WATCHSTANDING PROCEDURE

1. ~~Checks operation of automatic moisture separators~~		
2. ~~Drains moisture separators manually by cracking open drain valve~~		
3. ~~Observes condition of drainage to detect any evidence of oil/water emulsions~~		
4. ~~Drains moisture from start air and clutch air tanks by cracking moisture drain valves~~		
5. ~~Blows down any wye type compressed air strainers to expel entrained dirt and scale~~		
6. ~~Correctly describes actions as they are being performed~~		
7. ~~Actions taken lead to the full restoration of start and clutch air system by methods most suitable and appropriate to the prevailing circumstances and conditions.~~		
8. ~~No safety violations are observed~~		

XXXVII. Monitoring sanitary ~~flushing~~ system

1. Checks plant operational status		
2. Checks source and pressure of sanitary flushing water pump		
3. Checks pump packing gland proper leak off or mechanical seal for leakage		
4. Checks sea suctions strainer pressure drop		
5. Checks sanitary ~~flushing~~ system hydro-pneumatic tank (or accumulator) ~~water header tank l~~level and pressure		
6. Reads and records operating parameters		
7. Reports any abnormal conditions		
8. Observes pollution prevention requirements		
9. Correctly describes actions as they are being performed		
10. No safety violations are observed		

XXXVIII. Monitoring sewage waste treatment plant

1. Checks plant operating status		
2. Checks destination of "black" water sewage and ensures compliance with pollution prevents requirements		
3. Checks pressure and mechanical seal leakage of sewage circulating and overboard discharge pumps		
4. Checks air compressor discharge pressure		
5. Checks level of chemical treatment batch tank		
6. Reads and records operating parameters		
7. Reports any abnormal conditions		
8. Correctly describes actions as they are being performed		
9. No safety violations are observed		

XXXIX. Monitoring an oily water separator system

1. Checks plant operating status Which plant?		
2. Checks bilge water tank level		
3. Checks oily water separator chamber pressure Is this a passive or dynamic system? When was it started up – nothing is indicated		
4. Checks filling and displacement water supply pressure		
5. Checks oil concentration of overboard discharge water How?		
6. Reads and records operating parameters		
7. Reports abnormal conditions, takes corrective actions if needed		
8. ~~Observes pollution prevention requirements~~ By what means?		
9. Correctly describes actions as they are being performed		
10. No safety violations are observed		